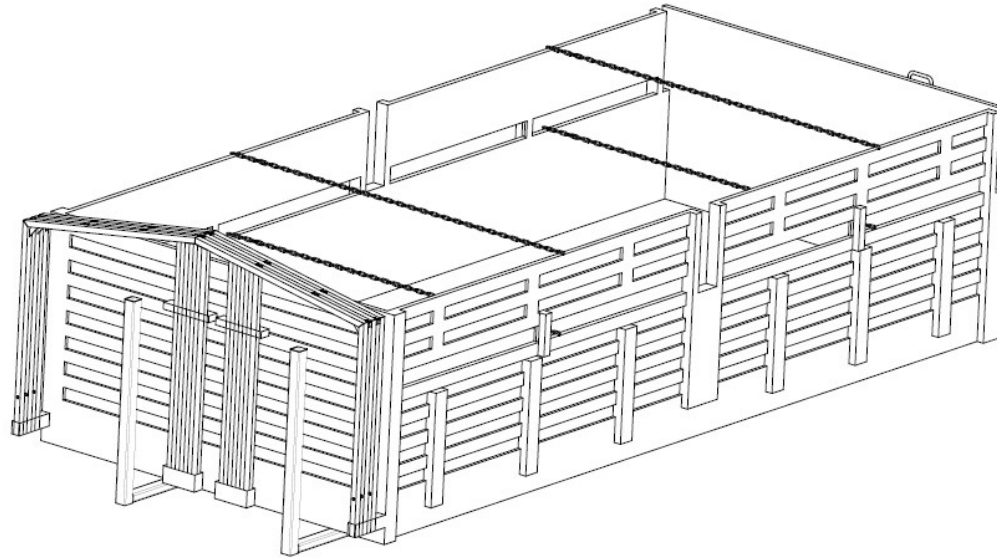




**PALAKKAD COMPLEX**  
**QUALITY ASSURANCE PLAN (QAP)**  
**FOR**  
**PLATFORM & ACCESSORIES (P/N: 510 BD 01007)**



QAP No : P-QP-QAP-1071-1026  
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	PREPARED BY	APPROVED BY
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## **PREFACE**

### **1) PURPOSE:**

To establish procedures for inspection, testing and acceptance of PLATFORM & ACCESSORIES at supplier end.

### **2) SCOPE:**

Covers Inspection, Testing and Acceptance of PLATFORM & ACCESSORIES (P/N: 510 BD 01007)

### **3) RESPONSIBILITY**

- a. The section head of Defence Materials group to ensure that the Quality Assurance Plan (QAP) is sent to all suppliers along with the Tender Enquiry and Purchase Order.
- b. The suppliers shall ensure that Quality Assurance Plan (QAP) is followed for testing, inspection and acceptance of item mentioned in purchase order.

### **4) PROCEDURE**

- a. The suppliers shall carry out inspection and testing of components as detailed in this QAP.
- b. All measuring Instruments & Testing Equipments used for inspection & testing shall have valid calibration.
- c. Calibration reports shall be produced to the QA inspector at the time of inspection & testing.
- d. Items are to be offered to BEML Source Inspection Team (SIT) for stage inspection / final assy prior to dispatch.
- e. BEML reserve the right to opt or co-opt any third part inspection agency for inspection at supplier end i.e CQA(BEML) / SQAW(V) / QUEST / any other third party inspection agency as desired by BEML.

**QUALITY ASSURANCE PLAN (QAP) FOR PLATFORM & ACCESSORIES (P/N:460 BD 01013)**

<b>Applicable Drawings</b>	BEML Drawings			
<b>Legends</b>	<b>P</b> = Perform	<b>W</b> = Witness	<b>V</b> = Verification	<b>R</b> = Review
	<b>GC</b> = Guarantee Certificate	<b>IR</b> = Inspection Reports	<b>TC</b> = Test Certificate	<b>COC</b> = Certificate Of Conformance / Compliance
	<b>CL</b> = Class	<b>Gr.</b> = Grade	<b>MTC</b> = Mill Test Certificate	<b>Mi.</b> = Minor
	<b>Mj.</b> = Major	<b>Mfg</b> - Manufacturer	<b>Insp</b> - Inspection	<b>NABL</b> – National Accredited Board Laboratory

<b>Abbreviations</b>	<b>A</b>	Approver	<b>MPT</b>	Magnetic Particle Test
	<b>ASME</b>	American Society of Mechanical Engineers	<b>NA</b>	Not Applicable
	<b>ASTM</b>	American Society for testing material	<b>NDT</b>	Non Destructive Testing
	<b>CQA(BEML)</b>	Controllerate of Quality Assurance(BEML)	<b>PO</b>	Purchase Order
	<b>DFT</b>	Dry film thickness	<b>P/N</b>	Part Number
	<b>Dimn</b>	Dimensions	<b>QAP</b>	Quality Assurance Plan
	<b>DP</b>	Dye Penetrate Test	<b>SIT</b>	Source Inspection Team BEML
	<b>HT</b>	Heat treatment.	<b>Spec.</b>	Specification
	<b>HTR</b>	Heat treatment Report	<b>VC</b>	Vendor code

<b>Sampling Plan (IS 2500 Pt- 1 :2000, Level II,)</b>	<b>Lot size (No)</b>	02 ~ 08	09 ~ 15	16 ~ 25	26 ~ 50	51 ~ 90	91 ~ 150	151 ~ 280	281 ~ 500
	<b>Sample Qty (No)</b>	02	03	05	08	13	20	32	50

**SEC-A. QUALITY ASSURANCE PLAN: – MANUFACTURING**

Sr. No.	Component	Characteristics	Class	Quantum of check	Types of check	Ref. Doc	Acceptance Norms	Format of record	QA Agency		Remarks
									Vendor	BEML	
1	Raw Materials (RM Under vendor scope)	Material identification	Critical	1 Sample per heat.	Mill TC & Check test at NABL Lab	Drawings/ Standards	Drawings/ Standards	Mill TC & NABL Lab TC	P	R	1 No/Heat - test specimen to be supplied to BEML.
		Chemical composition							P	R	
		Mechanical properties							P	R	
		Physical Properties		3 Sample per heat.	Check test at NABL Lab	Drawings/ Standards	Drawings/ Standards	NABL Lab TC	P	R	
2	Welding Procedure Specification (WPS) & Procedure Qualification Record (PQR) for welding of steel	Procedure Qualification Test	Critical	100%	Weld Visual, NDT (DPT&RT),DT (UTS)	ASME Sec IX	ASME Sec VIII-D1 Appendix 8 & 4 for RT & DP Resp.	WPS/ PQR	P	R	
	Welder/Welding Operator Performance Qualification (WPQ/WOPQ) for welding of steel.	Performance Qualification Test	Critical	100%	Weld Visual, NDT (DPT&RT),DT (UTS)	ASME Sec IX	ASME Sec VIII-D1 Appendix 8 & 4 for RT & DP Resp.	WPQ/ WOPQ	P	W	

Sr. No.	Component	Characteristics	Class	Quantum of check	Types of check	Ref. Doc	Acceptance Norms	Format of record	QA Agency		Remarks
									Vendor	BEML	
3	Bought out-Items (Hardware)	(i) Make (ii) Size (iii) Finish (iv) Property class/Gr.	Major	100%	Visual, TC / COC	Drawings/ Standards	Drawings / Standards	TC / COC	P	R	Make: TVS / UNBRAKO / LPS / FORBES.
4	Bought out-Items (Paints)	(i) Appearance/ Colour SCAMIC ISC No.294 (ii) Batch Code (iii)Exp.date (iv) Make	Major	100%	Visual, TC / COC from OEM	Drawings/ IS:5-2007	Drawings / Standards	TC / COC from OEM	P	R	
5	Bought out-Items (Electrodes)	(i) Visual (ii) Chemical (iii) Make (iv) Batch Code (v) Exp.date	Critical	100%	Visual, TC / COC from OEM	Drawings/ Standards	Drawings / Standards	TC / COC from OEM	P	R	
6	Fabrication/ Manufacturing	(i) Set up/Fit up inspection (ii) NDT(DP) of weld joints (after root weld & Final pass) (iii) UT (Critical joints) (iv) Dimensions	Critical	100%	Verification of (i) Fitment (ii) DP test (iii) UT (iv) Dimensions	Drawings/ Standards/ DP procedure	Drawings/ Standards/ DP procedure	Dim. & Welding Check sheet, DP/UT Test report	P	W	1.Generate the reference 2.Transfer the reference 3.Verify dimensions w.r.t reference

Sr. No.	Component	Characteristics	Class	Quantum of check	Types of check	Ref. Doc	Acceptance Norms	Format of record	QA Agency		Remarks
									Vendor	BEML	
7	<b>Surface Treatment:</b> (i) Degreasing (ii) Grit / Shot blasting	(i) Appearance. (ii) Batch Code (iii) Exp.date (iv) Make	Major	100%	Visual, TC / COC from OEM	Drawings/ Standards	Drawings / Standards	i) TC / COC from OEM  ii) Degreasing & Shot blasting check sheet	P	R	
8	<b>Painting:</b> (i) PU Zinc Primer (IS:13759-93) (ii) PU Gloss Enamel(IS:13213-91) (iii) Colour: SCAMIC – ISC:294 (IS:5-2007)	(i) Appearance. (ii) Coating Thickness (DFT) (iii)	Major	100%	Visual, Check, TC from OEM	Drawings/ Standards	(i) Sheen / Gloss level (ii) DFT - PU Primer 20μ min (iii) DFT - PU Final 60μ min (iv) Drying time (v) Paint Peel off test report	i) Painting Check sheet ii) Paint Peel off test report / scratch test report	P	R	
9	<b>Identification Mark</b> on all Major Aggregates	Punch/Engrave of suitable font size: (i) Part No. (ii) Description (iii) Vendor Code. & Date of Mfg. (iv) Sl.No	Major	100%	Visual check.	Drawings/ Standards	i) Part No's as per applicable Drawing ii) All marking should be near & legible	Check Sheet	P	W	

**SEC-B. QUALITY ASSURANCE PLAN: – PERFORMANCE TESTING**

Sr. No.	Component	Characteristics	Class	Quantum of check	Types of check	Ref. Doc	Acceptance Norms	Format of record	QA Agency		Remarks
									Vendor	BEML	
1	(i) Side door opening test (LH& RH) (ii) Rear door opening test	(i) Spring action. (ii) Free Movement	Major	100% 2 Times	Verify/ Visual	Drawing / Process Sheet / ISPL	At maximum force door to swing three times and rest at an angle	Check Sheet	P	W	
2	Side & Rear doors locking function	(i) Effectiveness of locking (ii) Wing nut tightening					Proper seating of lock in the groove		P	W	
3	Ladder / Step Board	(i) Opening/Closing (ii) Locking					Smooth opening and locking		P	W	
4	Inspection Cover	(i) Opening/Closing (ii) Locking bolts matching & seating					Full tightening and no mismatch		P	W	
5	Mounting of Hoop Structures on Platform assy	(i) Qty (ii) Painted Condition					Smooth entry and locking.		P	W	Remove & Store in front wall
6	Mounting of Hoop Rods on Hoop Structures	(iii) Fitment (iv) Locking									
7	Side Pulley	(i) Rotation (ii) Mounting Angle					Smooth Rotation of roller		P	W	

Sr. No.	Component	Characteristics	Class	Quantum of check	Types of check	Ref. Doc	Acceptance Norms	Format of record	QA Agency		Remarks
									Vendor	BEML	
8	Pick Axle and Mattock Holder	Fitment and Locking	Major	100% 2 Times	Verify/ Visual	Drawing / Process Sheet / ISPL	Rigid locking and no play	Check Sheet	P	W	
9	Hauling Bar	Fitment and Locking					Rigid locking and no play		P	W	
10	Chain Locking	Fitment and Locking					Rigid locking		P	W	
11	Box Assy (Ballast) (P/N: 482HP02011)	(i) Qty (ii) Painted Condition (iii) Fitment, Locking bolts matching & seating				Drg No. 482HP02011 Process Sheet / ISPL	(i) Qty – 5 Nos (ii) DFT – 80 $\mu$ (iii) Proper fitment, Rigid locking and no play		P	W	To be Supplied in Assembled condition
12	Seat Cum Box Assy (P/N: 482HP02028)	(i) Qty (ii) Painted Condition (iii) Lid Opening/Closing (iv) Fitment, Locking bolts matching & seating.				Drg No. 482HP02028 Process Sheet / ISPL	(i) Qty – 5 Nos (ii) DFT – 80 $\mu$ (iii) Lid 90° opening and no mismatch of locking. (iv) Rigid locking and no play		P	W	
13	Jib Carne Assy	(i) Fitment (ii) Rotation (iii) Vertical & Downward movement. (iv) Locking (v) Lubrication				Drawing / Process Sheet / ISPL	(i) Rigid fitment (ii) Smooth Rotation of arm (iii) Smooth movement of column. (iv) Rigid locking and no play (v) Sufficient greasing to be for free movement of column & Arm		P	W	To be Supplied in loose condition



**SEC-B. QUALITY ASSURANCE PLAN: – PACKING & SUPPLY CONDITION.**

Sr. No.	Component	Characteristics	Class	Quantum of check	Types of check	Ref. Doc	Acceptance Norms	Format of record	QA Agency		Remarks
									Vendor	BEML	
1	Loose Supply Items applicable for each Platform  i) Jib Carne (1 No/Platform) ii) Platform Pad (6 No, 2 No /Platform) iii) Yoke Pad (8 No/Platform) iv) Yoke (8 No/Platform) v) Hex Nut M18 (32 No/Platform)	i) Qty ii) Packing	Major	100%	Verify/ Visual	Drawing	(i) Qty  (ii) Individual items are to be fully packed / covered with PU foam sheet / Bubble sheet.  (iii) All the items are to be packed in one wooden box applicable for each Platform.  (iv) The wooden box should have proper separation / compartments to avoid damaged of items during transportation.  (v) Packing list with Packing PO No, P/N, and Item Description, Packing Qty is to be pasted on the wooden box.  (vi) From & To Address Details to pasted/painted on the wooden box.	Check Sheet	P	V	
2	Platform Assy.	Packing	Major	100%	Verify/ Visual	Drawing	(i) Individual Platform Assy has to be packed fully & covered with tarpaulin / polythene cover to protect from anticipated environmental conditions and to avoid damages during transportation.	Check Sheet	P	V	